

## **CLAIMS**

What is claimed is:

1. A battery charging system for use with an induction charger, comprising:  
a secondary coil for receiving magnetic flux produced by a primary coil of the induction charger, said secondary coil having a plurality of turns; and  
a control circuit for controlling a number of turns of said secondary coil that are used in charging at least one cell.
2. The battery charging system of claim 1, wherein said control circuit controls said number of turns responsive to at least one condition from the group consisting of a state of charge of said at least one cell, a temperature of said at least one cell, and a charge current.
3. The battery charging system of claim 1, wherein said secondary coil further comprises a plurality of taps, each of said taps providing an electrical connection to said secondary coil.
4. The battery charging system of claim 3, wherein a flow of time-varying electric current through said primary coil generates a voltage potential between at least two of said plurality of taps.
5. The battery charging system of claim 4, further comprising at least one switch responsive to a control signal generated by said control circuit, said switch operable between a first position wherein a first voltage is applied from a first of said plurality of taps to said at least one cell, and a second position wherein a second voltage is applied from a second of said taps to said at least one cell.
6. The battery charging system of claim 5, wherein said switch comprises at least one device selected from the group consisting of a transistor, a relay, and a mechanical switch.
7. The battery charging system of claim 1, wherein said secondary coil, said control circuit, and said cell are contained within a battery.

8. The battery charging system of claim 1, wherein said secondary coil and said control circuit are contained within a battery operated device.

9. The battery charging system of claim 8, wherein said cell is detachable from said battery operated device.

10. An induction charging system, comprising:

(a) an induction charger, comprising:

a primary coil; and

a power supply which supplies a time-varying electric current to said primary coil; and

(b) a first battery charging system for charging at least one cell, said first battery charging system comprising:

a secondary coil for receiving magnetic flux produced by said primary coil of said induction charger, said secondary coil having a plurality of turns and generating an output voltage responsive to said received magnetic flux; and

a control circuit for controlling a number of turns of said secondary coil that are used for said output voltage generation, said number of turns being controlled in response at least in part to a state of charge of said at least one cell.

11. The induction charging system of claim 10, further comprising:

at least a second battery charging system having a secondary coil for receiving magnetic flux produced by said primary coil of said induction charger;

wherein a second cell is charged by said second battery charging system simultaneously with a charging of said first cell.

12. The charging system of claim 10, wherein said control circuit further controls said number of turns responsive to at least one condition from the group consisting of a temperature of said at least one cell and a charge current.

13. A method for charging a cell with an induction charger, comprising the steps of:

receiving with a secondary coil a magnetic flux produced by the induction charger,  
said secondary coil having a plurality of turns that are used in charging the cell; and  
controlling a number of turns of said secondary coil.

14. The method of claim 13, wherein said controlling a number of turns step is responsive to at least one condition from the group consisting of a state of charge of said cell, a temperature of said cell, and a charge current.

15. The method of claim 13, further comprising the step of providing a plurality of taps on said secondary coil, each of said taps providing an electrical connection to said secondary coil.

16. The method of claim 15, further comprising the step of supplying a flow of time-varying electric current through said primary coil to generate a voltage potential between at least two of said plurality of taps.

17. The method of claim 16, further comprising the steps of:  
providing at least one switch responsive to a control signal generated by said control circuit; and  
signaling said switch to transition between a first position wherein a first voltage is applied from a first of said taps to cell, and a second position wherein a second voltage is applied from a second of said taps to said cell.

18. The method of claim 17, wherein said switch comprises at least one device selected from the group consisting of a transistor, a relay, and a mechanical switch.

19. A method for charging a cell with an induction charger, comprising the steps of:  
supplying a magnetic flux for charging at least one cell;  
receiving said magnetic flux using a first secondary coil;  
selectively controlling the number of turns of said first secondary coil in response at least in part to a state of charge of said at least one cell; and

generating an output voltage in response to said received magnetic flux and selectively controlled number of turns of said first secondary coil.

20. The method of claim 19, wherein said number of turns are controlled responsive to at least one condition from the group consisting of a state of charge of said at least one cell, a temperature of said at least one cell, and a charge current.

21. The method of claim 20, further comprising the step of providing at least a another cell which is charged by a second secondary coil receiving magnetic flux from said induction charger, said second cell being charged simultaneously with said charging of said first cell.